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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/883,963
Filing Date: June 20, 2001
Appellant(s): MENARD ET AL.

Matthew Johnston
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 3/13/06 appealing from the Office action mailed on 7/13/05.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

The copy of the appealed claims contained in the Appendix to the brief is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,736,935	Lambropoulos	4-1998
6,057,779	Bates	5-2000

Ziemer,R.E. "Digital Communications and Spread Spectrum Systems" Macmillan Publishing Company (1985), pp 336.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 12-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lambropoulos (5,736,935) in view of Bates (6,057,779) and Ziemer (1985-edition on Spread Spectrum System).

Regarding claim 12, Lambropoulos teaches user transmission/reception means intended to be carried by a user for transmitting the response signal for controlling unlocking actuation of the operable panel (col. 7, lines 6-19 and lines 30-35, door unlocked via function code), a system for controlling locking/unlocking means of at least one openable panel of a vehicle, comprising: vehicle transmission/reception means carried by the vehicle, comprising vehicle memory means comprising a vehicle register in which is stored random code (col. 4, lines 29-50, random number associated with security code 100 and 102); vehicle transmission means for transmitting an interrogation signal (col. 4, lines 63-65, interrogator C); and vehicle decode means for decoding a response signal received and for verifying whether the

received signal carries a signature of a user transmission means (col. 7, lines 10-12, security code associated with random number (col. 4, lines 46-50)); and user transmission/reception means intended to be carried by a user for transmitting the response signal for controlling unlocking actuation of the operable panel (col. 7, lines 30-35, door unlocked), comprising user memory means comprising a user register in which is stored the random code (col. 4, lines 41-50, security code associated with random number (col. 4, lines 46-50)); user decoding means for decoding the transmission signal received (col. 6, lines 14-21, recovering baseband data); and the user transmission means for transmitting the response signal which carries the random code and the signature which is specific to the user transmission/reception means (col. 7, lines 6-19, random code associated with security code 100 and function code associated with signature 108).

But Lambropoulos does not teach

vehicle memory means comprising a vehicle circular shift register in which is stored a pseudo-random code;

vehicle transmission means for transmitting an interrogation signal which carries the pseudo-random code;

vehicle de-spreading means for de-spreading a response signal received unless a pseudo-random code carried by the response signal is not synchronized in substantial correlation with a corresponding pseudo-random code stored in the vehicle memory means by a shift less than required for an intermediate transmission means to intercept and retransmit a response signal; and user memory means comprising a user circular shift register in which is stored the pseudo-random code; and

user de-spreading means for de-spreading the transmission signal received unless the pseudo-random code carried by the interrogation signal is not synchronized in substantial correlation with the corresponding pseudo-random code stored in the user memory means by a shift less than required for an intermediate transmission means to intercept and retransmit the interrogation signal; and the user transmission means for transmitting the response signal which carries the pseudo-random code and the signature which is specific to the user transmission/reception means.

However, Bates teaches, in the art of wireless communication system,

memory means comprising a vehicle circular shift register (col. 7, lines 7-15, lock is enabled 22; col. 7, lines 54-67, memory stages associated with feedback shift register or circular shift register) in which is stored a pseudo-random code (col. 7, lines 54-67, memory stages associated with feedback shift register or circular shift register);

vehicle transmission means (col. 7, lines 16-19, transmitting spread spectrum signal) for transmitting a signal which carries the pseudo-random code; and

vehicle de-spreading means (col. 7, lines 42-45, de-spreading means or un-spread and restore the modulated message) for de-spreading a response signal received unless a pseudo-random code carried by the response signal is not synchronized in substantial correlation with a corresponding pseudo-random code stored in the vehicle memory means; and

user memory means comprising a user circular shift register in which is stored the pseudo-random code;

user de-spreading means for de-spreading the transmission signal received unless the pseudo-random code carried by the interrogation signal is not synchronized in substantial correlation with the corresponding pseudo-random code stored in the user memory (col. 7, lines 32-34, user associated with interrogator 47 or the device user 32; col. 7, lines 54-67, memory stages associated with feedback shift register or circular shift register); and

the user transmission means (col. 7, lines 32-34, user associated with interrogator 47 or the device user 32) for transmitting the response signal which carries the modulated pseudo-random code (col. 7, lines 38-42, psuedo random carrier) to the vehicle de-spreading means to unlock the door for the purpose of providing secure communication.

Therefore, it would have been obvious to combine the memory means, vehicle transmission means, vehicle de-spreading means, the user memory means, user transmission means and user de-spreading means of Bates with the system described in Lambropoulos to achieve the advantage of secure communication.

But Bates does not explicitly states substantial correlation to unity so that signal can not be intercepted and retransmitted by unauthorized person.

However, Ziemer describes substantial correlation in terms of autocorrelation function Rc (figs. 7-8 and 7-9, page 336, lines 8-23) for delay of less than half bit of chip length or bit time length Tc provides Rc-autocorrelation being greater than one half. Of course, for delay of near zero, autocorrelation is almost unity wherein the user is right at the door so that signal can not be intercepted and retransmitted by unauthorized person. That is, unauthorized person is denied entry to the vehicle.

Therefore, it would have been obvious to combine the teaching of Ziemer and Bates because such autocorrelation larger than required value or near unity prevent unnecessary interception and retransmission by unauthorized person at all times, thus enhancing vehicle security.

Regarding claim 13, Lambropoulos teaches a system according to claim 12, wherein: the interrogation signal transmitted by the vehicle transmission/reception means comprises a key code (Fig. 2, interrogation code 104); and the response signal transmitted by the user transmission/reception means comprises a secret code (Fig. 1,

security code 50) determined by the user transmission/reception means as a function of the key code (Fig. 1, received key code matches with stored key code 52).

Regarding claim 14, Lambropoulos in view of Bates teaches a system according to claim 13, wherein the vehicle transmission/reception means further comprise a mixing means for mixing the key code (Lambropoulos-Fig. 2, interrogation code 104) with the pseudo-random code (Bates-col. 7, lines 16-19, modulated spread spectrum signals) carried by the interrogation signal (Lambropoulos-Fig. 2, interrogation code 104 or signal).

Regarding claim 15, Lambropoulos in view of Bates teaches a system according to claim 13, wherein the vehicle transmission/reception means further comprise a mixing means for mixing the key code (Lambropoulos-Fig. 2, interrogation code 104) with the pseudo-random code (Bates-col. 7, lines 16-19, modulated spread spectrum signals) carried by the response signal (Lambropoulos-col. 7, lines 6-19, random code associated with security code 100 and function code associated with signature 108).

Regarding claim 16, Lambropoulos in view of Bates teaches a system according to claim 13, wherein the key code (Lambropoulos-Fig. 2, interrogation

code 104) comprises the pseudo-random code (Bates-col. 7, lines 16-19, modulated spread spectrum signals) of the interrogation signal.

Regarding **claim 17**, Bates teaches a system according to claim 12, wherein the signature consists of the pseudo-random code (col. 7, lines 16-19, modulated spread spectrum signals) of the response signal.

Regarding **claim 18**, Bates teaches a system according to claim 12, wherein the system comprises means for synchronizing (col. 8, lines 1-19, post synch associated with spread signal) the vehicle memory means and the user memory means prior to transmission of the interrogation signal.

Regarding **claim 19**, Bates teaches a system according to claim 18, wherein: the pseudo-random code comprises a post-synchronization pseudo-random code (col. 8, lines 1-19, post synch associated with spread signal);

the user transmission/reception means transmits a pre-synchronization pseudo random code (col. 7, lines 34-36, PN code) upon activation of the user transmission/reception means; and the vehicle transmission/reception means comprise means for self-synchronizing (col. 7, lines 38-45, extract the modulated message) with the pre-synchronization pseudo-random code (col. 7, lines 38-45, psuedo random code PN) transmitted by the user transmission/reception means.

Regarding claim 20, Bates teaches a system according to claim 19, wherein the pre-synchronization pseudo-random code (col. 7, lines 38-45, psuedo random code PN) is shorter than the post-synchronization pseudo-random code (col. 7, lines 16-19, modulated spread spectrum signals with added synchronization code).

Regarding claim 21, Bates teaches a system according to claim 20, wherein the post-synchronization pseudo-random code comprises repetition of 31-chip sequence (col. 8, lines 31-56, 31 chip or bit sequence). But Lambropoulos in view of Bates does not teach 127-bit codes.

However, Bates discloses, in the art of vehicle security, post-synchronization pseudo-random code comprises repetition of 31 chip sequence (col. 8, lines 31-56, 31 chip or bit sequence). Therefore, it would have been obvious to a person skilled in the art at the time of invention was made to include psuedo-random code is 127 bit code as a matter of choice in design because Bates suggests repetition of 31 chip sequence and one skilled in the art recognizes 127 bit code is a matter of choice in design through routine experimentation in order to achieve optimum two-way communication.

Regarding claim 22, Bates teaches a system according to claim 12, wherein the interrogation signals and response signals comprise RF signals modulated by a two-phase NRZ modulation (col. 8, lines 10-13, PSK suggests BSK or binary SK).

Regarding claim 23, Lambropoulos teaches a system according to claim 12, wherein the vehicle is an automobile (col. 2, lines 26-46, vehicle associated with seat control, Keyless entry system, unlocking door).

Regarding claim 24, Bates teaches a system according to claim 12, wherein the time shift comprises less than one half of a bit period with respect to the code of the user circular shift register (col. 7, lines 46-59, value of autocorrelation suggests shift of half bit teaches greater than one half unit; note- Ziemer, figs. 7-8 and 7-9, pages 336-337, for delay of less than half bit of chip length, autocorrelation associated with correlation is greater than one half provides sufficient synchronization considering system noise; of course, for delay of near zero autocorrelation is almost unity wherein the user is right by the door).

Regarding claims 25-26, Lambropoulos teaches the system according to claim 12, wherein when said response signal is received after a delay exceeding said time shift and said half bit period (note; see Ziemer, figs. 7-8 and 7-9, pages 336-337, for delay of greater than half bit of chip length, autocorrelation

associated with correlation is less than one half provides no synchronization, subsequently there is no code matching), said system prevents unlocking actuation (col. 7, lines 6-16, matching code unlocks door implies un-matching code prevents door from being unlocked) of said operable panel.

(10) Response to Argument

CLAIM 1.

Appellant argues that Zeimer has nothing to do with time shift but rather spread within a bandwidth.

The examiner acknowledges cited paragraphs in the art of Zeimer are figs. 7-8 and 7-9, pages 336-337, which lead to the appellant's response. The examiner's intent is to clarify the autocorrelation function. Therefore, the examiner has provided the teaching of Zeimer wherein the autocorrelation function Rc is a function of time shift in terms of chip time length Tc as indicated in paragraphs of figs. 7-8 and 7-9, lines 8-23, page 336 (Zeimer).

Appellant argues that Bates does not teach time shift, and likewise Zeimer does not time shift.

However, Bates teaches time shift in terms of spreads spectrum communication. Despreading the received modulated pseudo-random code (PN sequence) with stored pseudo-random code (PN sequence) takes place after synchronization is established. The measure of synchronization or correlation is provided by autocorrelation function associated with the cross-correlation function of two same PN sequences (col. 7, lines 6-15) multiplied at small time shift. That is, autocorrelation function is unity for no time shift, and zero for substantial large time shift.

For the purpose of clarifying the autocorrelation function, the examiner has provided the teaching of Zeimer wherein the autocorrelation function Rc is a function of time shift in terms of chip time length Tc (figs. 7-8 and 7-9, lines 8-23, page 336). For time shift of less than half bit of chip length or bit time length Tc, Rc-autocorrelation associated with correlation is greater than one half as indicated in the figure 7-9, and indicates sufficient synchronization considering system noise. Of course, for time shift of near zero, autocorrelation is almost unity or substantial correlation, and the user transmission/reception means is right at the door so that signal can not be

intercepted and retransmitted by unauthorized person. That is, unauthorized person is denied entry to the vehicle.

The examiner notes that the applicant does not disclose device means to evaluate correlation function in association with time shift in the specification nor in claims 12-26, and furthermore, the examiner notes the autocorrelation function is a mathematical manifestation of time shift between two identical functions.

Appellant argues that Bates and Zeimer are not combinable.

The examiner maintains that Bates and Zeimer teach spread spectrum communication system within wireless communication system, and Zeimer provides detailed teaching of time shift in terms of autocorrelation function associated with cross-correlation function. Therefore, they are combinable to teach time shift in autocorrelation function and cross-correlation function.

CLAIM 13.

Appellant argues that Lambropoulos fails to identify the secret code identified by the user and the prior art also fails to contain the requisite motivation to support the combination.

The examiner maintains that Lambropoulos teaches secret code (private code; pseudo-random number) in the authorized user transceiver is determined when received key code (or interrogation code) is matched in the user transceiver (col.7, lines 6-35), and then the authorized user transceiver transmits secret code and function code to the interrogator.

Furthermore, since Lambropoulos is a primary prior art, motivation is not provided, but teaching of key code is provided.

CLAIM 14.

Appellant argues that Lambropoulos fails to teach mixing means for mixing the key code with the pseudo-random code, and the prior art also fails to contain the requisite motivation to support the combination.

The examiner maintains that Lambropoulos in view of Bates teaches a system according to claim 13, wherein the vehicle transmission/reception means further comprise a mixing means for mixing the key code (Lambropoulos-Fig. 2, interrogation code 104) with the pseudo-random code (Bates-col. 7, lines 16-19, modulated spread spectrum signals) carried by the interrogation signal (Lambropoulos-Fig. 2, interrogation code 104 or signal).

Furthermore, the examiner maintains that Lambropoulos and Bates teach wireless communication. Therefore, they are combinable to teach spread spectrum communication system to provide higher level of vehicle security.

CLAIM 15.

Appellant argues that fourth reference of Yamamoto is irrelevant to the rejection of claim 15 and claims 16-26.

The examiner acknowledges typographical error of Yamamoto in place of Bates wherein all limitations in claim 15 and claims 16-26 are taught in prior arts of Lambropoulos and Bates the environment of wireless communication system.

CLAIM 16 - CLAIM 26.

Appellant argues that fourth reference of Yamamoto is irrelevant to the rejection of claims 16-26.

The examiner acknowledges typographical error of Yamamoto in place of Bates, and therefore maintains that all limitations in claims 16-26 are taught in prior arts of Lambropoulos and Bates within the environment of wireless communication system.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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